TRANSWESTERN

A DECADE IN THE MAKING

Forecasting the Future of Colossal Warehouse Demand

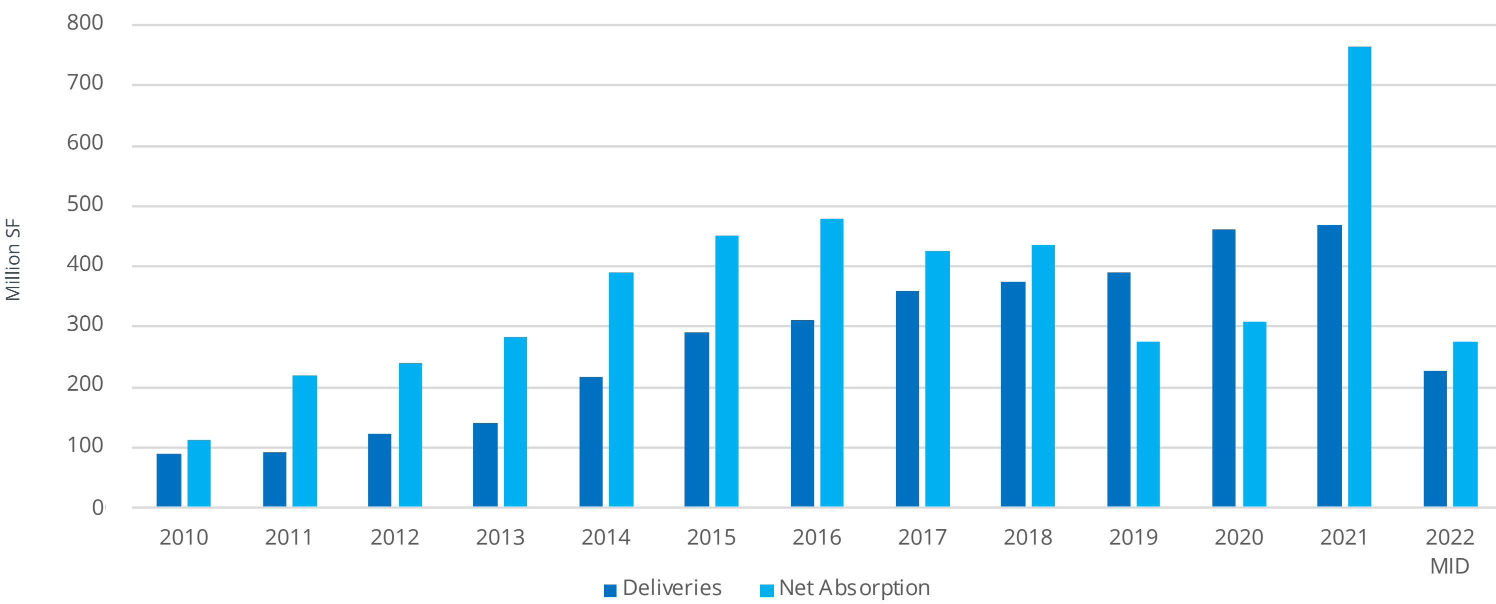
OCTOBER 2022

Since the end of the Global Financial Crisis in 2009, industrial real estate has been the most consistent asset class, due largely to the growth of e-commerce. Occupancy growth has outpaced delivery of new inventory in 10 of the past 12 years, and as of mid-year 2022, tenants have absorbed nearly 4.7 billion square feet (BSF) of industrial space in the U.S. during that timeframe, outpacing the 3.5 BSF of completed industrial real estate development.

4.7 BSF

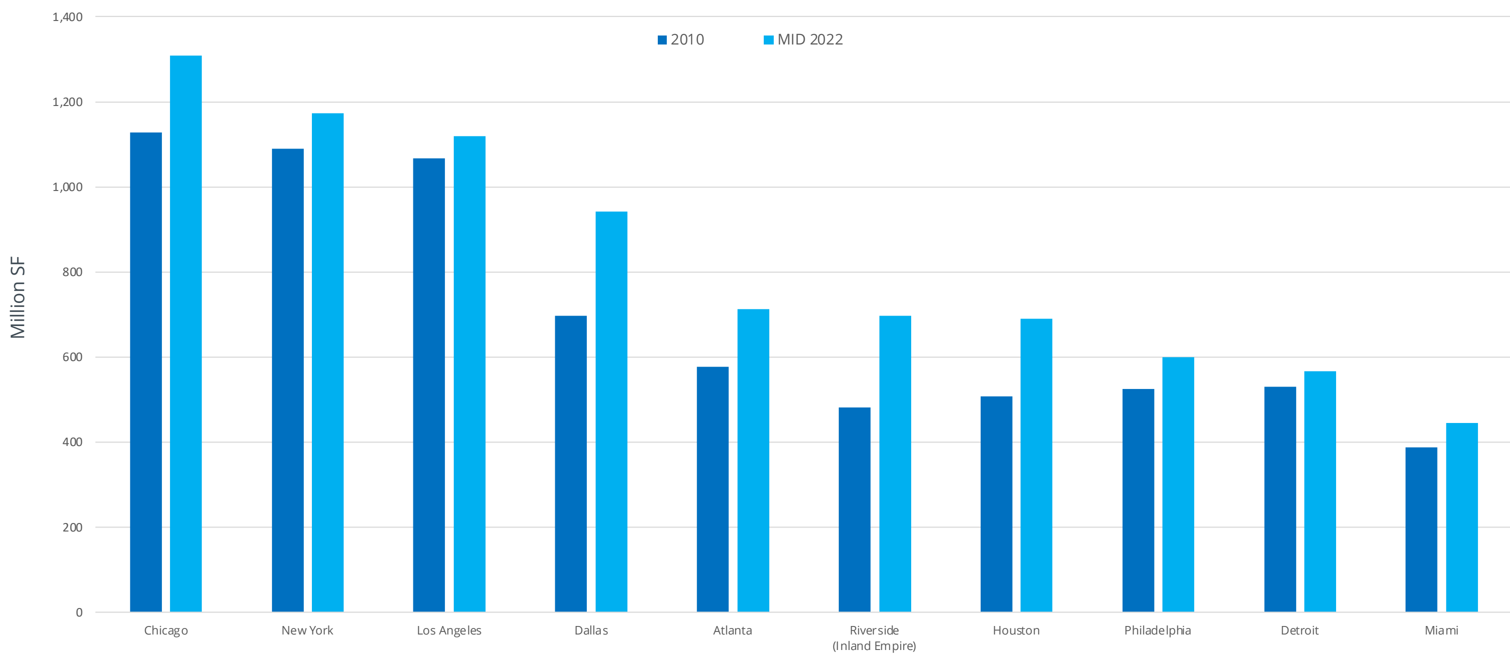
GROWTH DRIVERS WERE USUALLY PREDICTABLE (AND SOMETIMES NOT)

U. S. DELIVERIES VS. OCCUPANCY GROWTH



Source: CoStar, Transwestern

LARGEST U.S. INDUSTRIAL REAL ESTATE MSAs RENTABLE BUILDING AREA (SF)



Source: Costar, Transwestern

WAREHOUSE POPULATION QUOTIENT

With consumers being the ultimate driver for warehouse space demand, one strong predictor of the need for more industrial real estate is the total population related to market size. Dividing the total industrial square footage in a market by the geography's total population provides a Warehouse Population Quotient (WPQ) that can aid in valuable market comparisons.

On a percentage basis, Dallas led the top five MSAs with more than 35% of inventory growth since 2010.

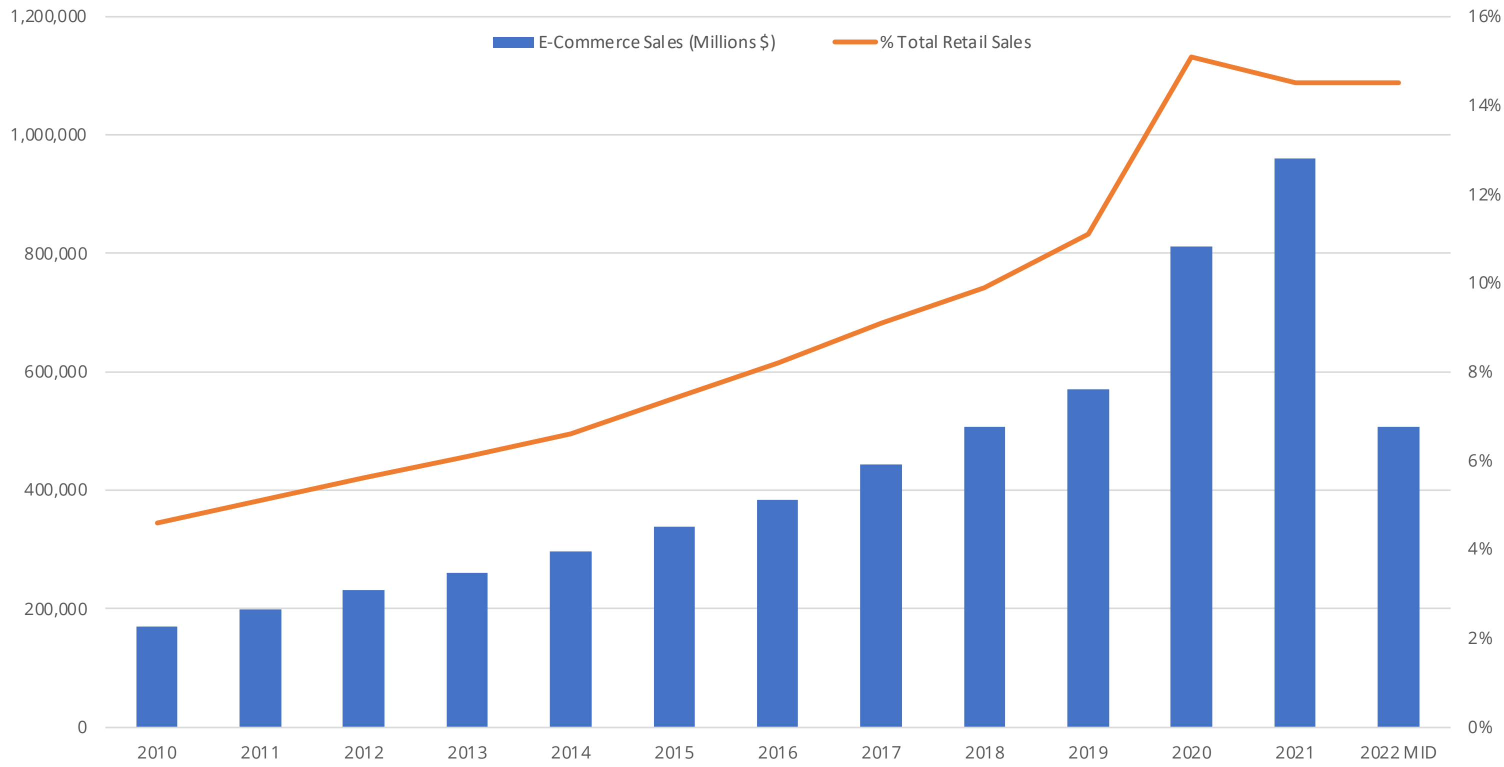
Initially, industrial growth occurred in large population centers with already established industrial real estate footprints. In 2010, the five largest industrial metropolitan statistical areas (MSA) each had more than 575 million square feet (MSF) of supply: Chicago, New York, Los Angeles, Dallas and Atlanta. These large regions have only gotten bigger, each adding a substantial amount of new supply through mid-2022, ranging from 51 MSF to 246 MSF.

Two other MSAs added more than 180 MSF of new product: Houston and Riverside-San Bernardino, California, more commonly known among industrial real estate market players as the Inland Empire.

These metros increased their footprints by 36.2% and 44.5%, respectively, benefiting from strong population growth and their prominence as key port distribution centers.

While New York, Los Angeles and Chicago are the three most-populated U.S. metros, four of the other five aforementioned markets also ranked among the top 10 as of the 2010 Census, with Riverside-San Bernardino being the exception (No. 13).

U.S. ANNUAL E-COMMERCE SALES % OF TOTAL SALES



Source: U.S. Census Bureau

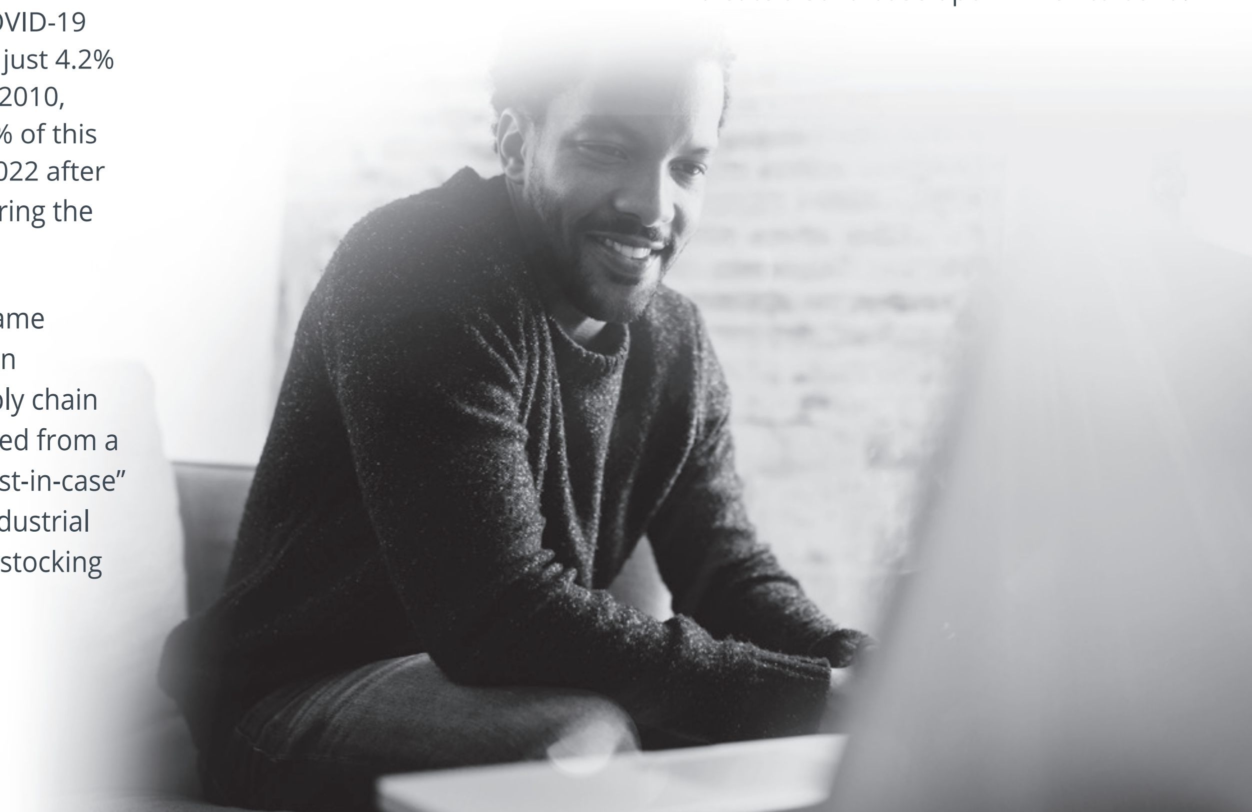
E-COMMERCE GROWS UP

The catalyst for the massive expansion of the industrial real estate sector is of course e-commerce, which grew steadily during the 2010s and accelerated significantly during the COVID-19 pandemic. Accounting for just 4.2% of total U.S. retail sales in 2010, e-commerce reflects 14.5% of this measure as of mid-year 2022 after rising as high as 16.4% during the peak of the pandemic.

With more e-commerce came greater sophistication in an attempt to maximize supply chain efficiencies. Retailers moved from a just-in-time model to a “just-in-case” model, expanding their industrial real estate footprints and stocking up on inventory.

Technology was also enhanced for the end user, resulting in more mobile-friendly websites for online shoppers, whose expectations for rapid delivery have intensified.

As brick-and-mortar stores reopened, digital sales cooled, but consumer behavior has shifted permanently, and these new strategies and applications create a solid base upon which to build.



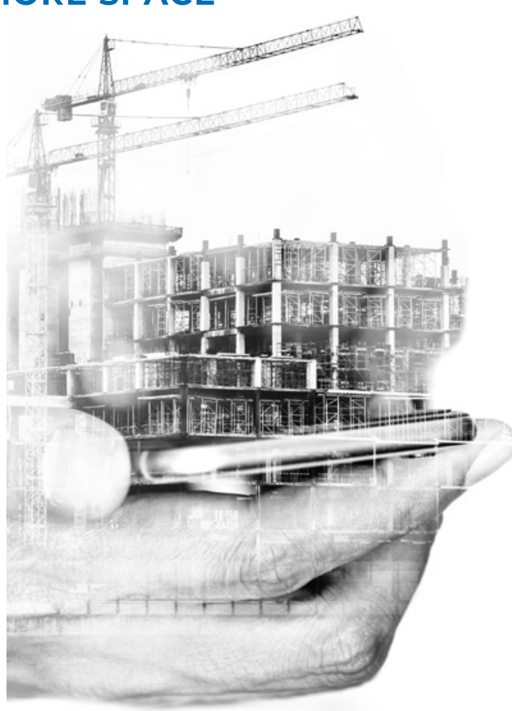
MSA	2010	2020	Pop Growth 2020 vs 2010	2022 (Est.)	2027 (Proj.)	Pop Growth 2027 vs 2022
New York-Newark-Jersey City, NY-NJ-PA	18,897,109	19,124,359	1.2%	20,224,976	19,945,519	-1.4%
Los Angeles-Long Beach-Anaheim, CA	12,828,837	13,109,903	2.2%	13,196,147	13,002,581	-1.5%
Chicago-Naperville-Elgin, IL-IN-WI	9,461,105	9,406,638	-0.6%	9,600,594	9,486,661	-1.2%
Dallas-Fort Worth-Arlington, TX	6,366,542	7,694,138	20.9%	7,961,535	8,393,172	5.4%
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	5,965,343	6,107,906	2.4%	6,290,595	6,309,366	0.3%
Houston-The Woodlands-Sugar Land, TX	5,920,416	7,154,478	20.8%	7,421,501	7,800,183	5.1%
Washington-Arlington-Alexandria, DC-VA-MD-WV	5,649,540	6,324,629	11.9%	6,522,851	6,626,626	1.6%
Miami-Fort Lauderdale-Pompano Beach, FL	5,564,635	6,173,008	10.9%	6,239,688	6,283,278	0.7%
Atlanta-Sandy Springs-Alpharetta, GA	5,286,728	6,087,762	15.2%	6,268,860	6,484,396	3.4%
Boston-Cambridge-Newton, MA-NH	4,552,402	4,878,211	7.2%	4,995,283	5,002,052	0.1%
San Francisco-Oakland-Berkeley, CA	4,335,391	4,696,902	8.3%	4,804,901	4,728,257	-1.6%
Detroit-Warren-Dearborn, MI	4,296,250	4,304,136	0.2%	4,394,429	4,373,033	-0.5%
Riverside-San Bernardino-Ontario, CA	4,224,851	4,678,371	10.7%	4,647,703	4,714,497	1.4%
Phoenix-Mesa-Chandler, AZ	4,192,887	5,059,909	20.7%	5,009,506	5,215,028	4.1%
Seattle-Tacoma-Bellevue, WA	3,439,809	4,018,598	16.8%	4,131,015	4,238,801	2.6%
Minneapolis-St. Paul-Bloomington, MN-WI	3,333,633	3,657,477	9.7%	3,764,607	3,839,797	2.0%
San Diego-Chula Vista-Carlsbad, CA	3,095,313	3,332,427	7.7%	3,315,091	3,319,148	0.1%
St. Louis, MO-IL	2,787,701	2,805,473	0.6%	2,821,402	2,812,696	-0.3%
Tampa-St. Petersburg-Clearwater, FL	2,783,243	3,243,963	16.6%	3,251,689	3,344,394	2.9%
Baltimore-Columbia-Towson, MD	2,710,489	2,800,189	3.3%	2,861,168	2,872,331	0.4%
Denver-Aurora-Lakewood, CO	2,543,482	2,991,231	17.6%	3,058,781	3,169,725	3.6%
Charlotte-Concord-Gastonia, NC-SC	2,243,960	2,684,276	19.6%	2,767,131	2,903,700	4.9%
Portland-Vancouver-Hillsboro, OR-WA	2,226,009	2,510,259	12.8%	2,572,359	2,623,410	2.0%
San Antonio-New Braunfels, TX	2,142,508	2,590,732	20.9%	2,661,164	2,799,634	5.2%
Orlando-Kissimmee-Sanford, FL	2,134,411	2,639,374	23.7%	2,799,598	2,940,654	5.0%

Source: U.S. Census Bureau, ESRI

ASSESSING THE NEED FOR MORE SPACE

Perhaps the best measure for the need for more industrial real estate is the total population as it relates to market size (square footage/population). However, as there are many additional variables to consider, it is difficult to determine the perfect fit, as evidenced by the wide range in the Warehouse Population Quotient (WPQ) within the 25 largest industrial real estate metros in the U.S. (e.g., a high of 150 in the Inland Empire versus a low of 29 in the Washington, D.C., metropolitan statistical area, or MSA).

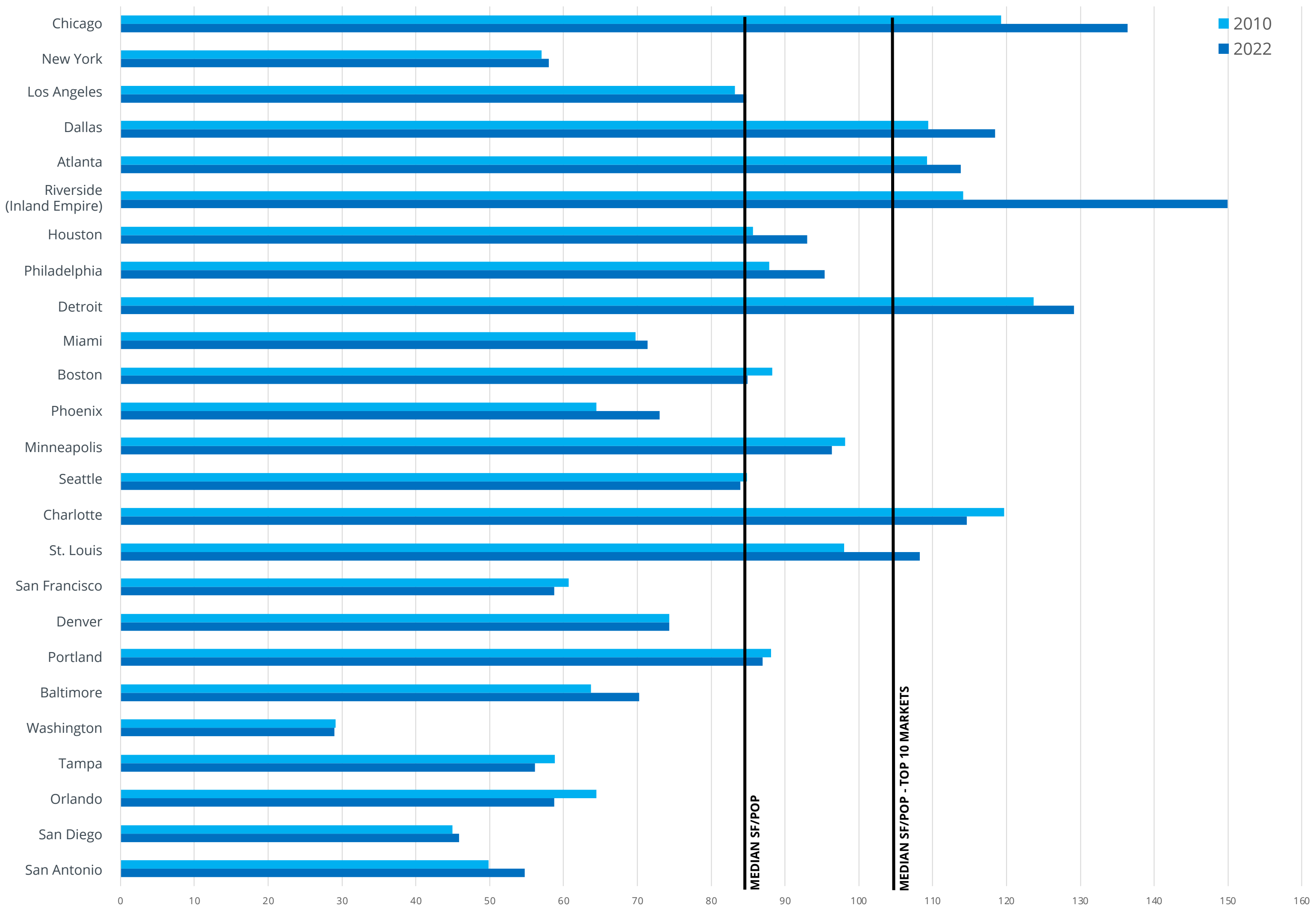
Coastal port markets boast the largest population centers and therefore have a greater urgency for warehouse and distribution space. Conversely, some markets have a more pressing need for other types of real estate and benefit from a large industrial real estate presence nearby.



For example, Washington D.C.'s metro is government heavy and the need for multifamily properties is high. Therefore, it receives some of its distribution capacity from the Baltimore-MD, Philadelphia-PA, and Richmond, VA areas. Furthermore, the entire Northeast, which is highly populated but smaller geographically, is served to a large extent by distribution centers in the New York and Philadelphia metros, as 33% of the U.S. population can be reached within a day's drive of the region's geographic center in New Jersey.

TOP 25 U.S. MARKETS BY POPULATION: INDUSTRIAL REAL ESTATE SQUARE FEET PER PERSON

(markets sorted by total rentable building area)



Source: U.S. Census Bureau; Costar; Transwestern

BIG GAP BETWEEN THE LARGEST COASTAL MARKETS

The largest U.S. population base is the New York metro, with more than 19 million people as of the 2020 Census, plus another 1 million added through 2022, according to estimates. With 1.2 BSF of existing industrial real estate, this MSA averages a WPQ of 58. Conversely, the Los Angeles metro, the country's third-largest industrial real estate market with the second-largest population base, reflected a WPQ of 85 in 2022.

While the difference in the two figures seems peculiar, the markets are similar in that they are extremely constrained with record-low vacancy and historically high levels of product under construction in their nucleus and surrounding area. Additionally, both markets have some of the highest land prices in the country, especially near the ports. Despite the need to serve large population bases within these regions, both markets only slightly increased their respective ratios of warehouse space to population since 2010, when Los Angeles' WPQ was 83 and New York's stood at 57.

All the top 10 industrial real estate metros increased their warehouse footprints with respect to population since 2010, albeit Miami, at No. 10, increased its ratio minimally. The median WPQ for these 10 markets stood at 99 as of 2010 and has increased to 105 as of mid-year 2022.

85 WPQ
LA Metro

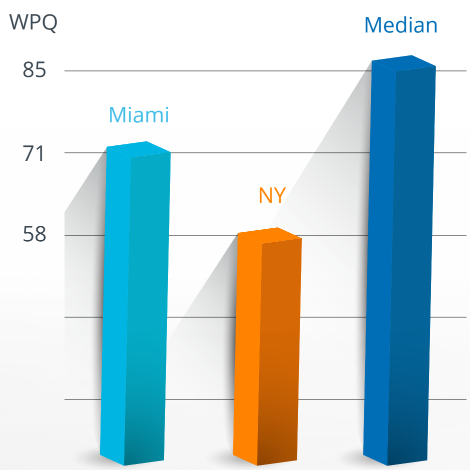
58 WPQ
NY Metro

ROOM FOR EXPANSION

When determining future growth markets, it is best to evaluate from the larger sample size. For the 25 most populated metros, the median WPQ was 85 as of mid-year 2022.

Additionally, the WPQ for all markets ranked 11 to 25 in size is substantially less than the median of 105 for the 10 largest markets. This might imply that some metros may have room to grow, particularly those with projected population increases. Let's take a look at some markets by applying comparisons by using the more conservative, lower median value.

The New York and Miami metros are the only top 10 industrial real estate markets with less than the median level for the top 25 markets.



The WPQ of 58 for New York, which has most of its industrial real estate situated in northern New Jersey, may seem a bit perplexing, especially since it is a major distribution center and home to the largest shipping port on the East Coast. However, the area is densely populated and amasses a large amount of real estate across other property types, so much of the region is essentially built out.

Due to New York's land constraints, developers continue to look for redevelopment opportunities from less performing property sectors and are also expanding the geography for new construction to the Philadelphia metro, which includes southern New Jersey, and Pennsylvania's Lehigh Valley.

The New York metro experienced minimal population growth between 2010 and 2020, and projections over the next five years call for a slight population loss. They are potentially easing what currently strong demand for additional warehouse space in the region.

Miami tracks a WPQ of 71, nearly unchanged from 2010. With population growth of nearly 12% through 2022, the need for more warehouse space seems evident. The current construction pipeline would increase the WPQ to 74. Miami has many barriers to industrial development, including environmentally challenged land and competition with both the housing industry due to population growth, and the hospitality industry, which is a critical part of the region's economy.

Nevertheless, Miami is near home to one of the fastest-growing ports in the U.S. Additionally, the expansion of nearshoring and potential manufacturing shifts from the Eastern Hemisphere to areas like Mexico and Latin America are anticipated.

Therefore, while Miami may not require the 67 MSF of new development required to match the median WPQ of the top 25 markets, it seems logical to anticipate a significant increase in industrial real estate construction in the region.

LOOSENING THE SUN BELT

In addition to Miami, Dallas, Atlanta, Houston, and the Inland Empire, five other Sun Belt markets have experienced double-digit percentage population growth since 2010: Phoenix, Charlotte, Tampa, Orlando, and San Antonio, while San Diego experienced a 7.7% increase. With the exception of Charlotte, each of these markets, like Miami, has a WPQ well below the median value for the top 25 markets, indicating that there may be a need for additional industrial development.

PHOENIX

Ranking No. 14 in population in 2010, Phoenix experienced a jump of more than 20% over the next 10 years, landing in the top 10 as of the 2020 Census. Growth is expected to continue through 2027, with a projected increase of 4.1% during the next five years. Industrial real estate developers have responded in turn, with nearly 44 MSF under construction in the Phoenix metro, which will increase the market's WPQ from 73 to 82. To reach the median WPQ average of 85, Phoenix would require an additional 15.6 MSF of new development.

CENTRAL FLORIDA

Population increases in the two central Florida markets of Tampa and Orlando have outpaced warehouse growth. As of mid-year 2022, Tampa's WPQ is 56 while Orlando's is 59, lower than their respective averages of 59 and 65 in 2010. Tampa has 7.9 MSF of new industrial real estate construction in the pipeline, which would push its WPQ back up to 59, while Orlando's 9.7 MSF under construction would raise its WPQ to 62, still below its 2010 level.

With these figures well below most other markets and projected population increases of 2.9% for Tampa and 5.0% for Orlando over the next five years, a considerable amount of additional industrial real estate could be needed in these metros.

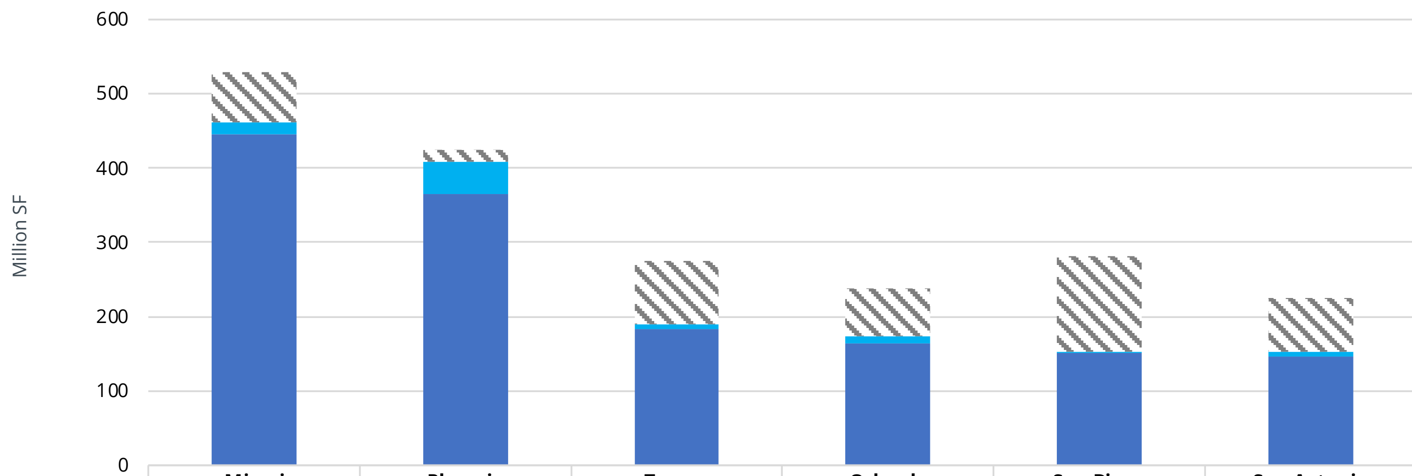
SAN ANTONIO

San Antonio experienced an almost 24% increase in population since 2010, and the industrial real estate market has kept pace as its WPQ has increased from 50 to 55 during the same period. The nearly 7 MSF of new construction in the pipeline raises that figure to 57. However, with a projected 5.2% population growth over the next five years, more development could be needed.

SAN DIEGO

Statistically, San Diego would appear to be very undersupplied based on its extremely low 46 WPQ at mid-2022. However, the area is served by the other major industrial real estate markets in Southern California, namely Los Angeles and the Inland Empire, with an aggregate WPQ well above the average.

SUN BELT MARKETS: EXPANSION POTENTIAL*



	Miami	Phoenix	Tampa	Orlando	San Diego	San Antonio
Expansion Potential	67	15.6	85.2	63.1	127.8	72.9
Under Construction	16.6	43.6	7.9	9.7	1.3	6.9
Market Size	445	366	183	164	152	146

*As of mid-year 2022
Source: CoStar, Transwestern

THE VALUE OF RESEARCH ANALYTICS

There is no perfect formula to determine how much industrial real estate product U.S. markets will need in the future, especially considering all the unknowns that can play into the equation. There are impediments to development to consider, such as availability of land and barriers to entry. Also, land prices are a factor, especially when tenants are considering expansion to secondary and tertiary markets with similar population bases. And global social, health and economic conditions can be unpredictable, as we are reminded again and again.

Yet, when assessing areas where population growth has occurred and expected to continue, coupled with a firm understanding of the rapid growth of e-commerce, it’s worth considering that some of these metropolitan areas appear to be underserved and are not benefiting as much from nearby distribution centers. This could make them ideally positioned for additional industrial real estate development.

TRANSWESTERN

Author:

MATT DOLLY
Research Director,
National Industrial Research Leader
matthew.dolly@transwestern.com

For more info:

ELIZABETH NORTON
Senior Managing Director,
Research Services
elizabeth.norton@transwestern.com

DOUG PRICKETT
Senior Managing Director,
Research & Investment Analytics
doug.prickett@transwestern.com